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RADIUM

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VOL. VIII JANUARY, 1916 No. 4

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A MONTHLY JOURNAL DEVOTED TO THE CHEMISTRY, PHYSICS AND THERAPEUTICS OF RADIUM AND RADIO-ACTIVE SUBSTANCES

RADIUM

A MONTHLY JOURNAL DEVOTED TO THE CHEMISTRY, PHYSICS AND THERAPEUTICS OF RADIUM AND RADIO-ACTIVE SUBSTANCES.

Edited and Published by Charles H. Viol, Ph. D., and William H. Cameron, M. D. with the assistance of collaborators working in the fields of Radiochemistry, Radioactivity and Radiumtherapy.

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VOL. VIII. JANUARY, 1916 No. 4

RESULTS OBTAINED BY THE USE OF RADIUM IN THE TREATMENT OF CANCER OF THE UTERUS*

AT THE UNIVERSITY OF PENNSYLVANIA HOSPITAL.

BY JOHN G. CLARK, M. D.

OF PHILADELPHIA, PA.

The treatment of cancer of the uterus—that will-o'-the-wisp of surgery—has for the last three decades been a bone of contention as regards the best method of circumventing the growth by surgical methods. The various forms of hysterectomy have been thoroughly tested, beginning, first, with the simple vaginal method, a large series of cases thus treated having been reported from American and European clinics. The final summary of results, however, after a probationary five-year period, showed the treatment to be lacking in effectiveness, first, because it was applicable to only a relatively small number of cases, and, second, because the percentage of ultimate cures it yielded was lamentably small. Then came Schuchart's more radical vaginal hysterectomy, which, in the hands of a few experts, among the foremost of whom is Schauta, has given a larger rate of ultimate cures; it is, however, a very difficult operation, and is attended by a larger mortality, and is followed by serious vesical and ureteral sequelæ. Because of these objections, this method has received only limited approval from gynæcologists.

Following this, the extended or more radical abdominal method came into vogue, and until three years ago continental gynæcologic literature was replete with the reports of cases from many clinics; these contained both favorable and adverse criticism. About three years ago these

*Reprinted from Annals of Surgery, LXIV, 602-612, November, 1912.

reports suddenly ceased, to be almost entirely superseded by the consideration of radium and mesothorium as new and promising therapeutic agents.

This brief discussion of the rapid change of events in the surgical treatment of cancer leads to the inevitable conclusion that the surgical world is still very much at sea as regards the most effective method of dealing with this disease. A decided surgical advance has been made, but the progress is in no way commensurate with the effort that has been expended, for even in carefully selected cases the best series of radical operations still yields less than 50 per cent. of recoveries.

As a convincing evidence of the limitations of surgical applicability, we offer the results of experience. In less than two years we have treated 49 cases of inoperable cancer of the uterus with radium, and during the same period only 12 cases have been considered as within radically operative limits. During the preceding ten years the number of radical operations performed was about 60. In other words, for 50 cases subjected to operation, at least 250 have been abandoned as hopeless. This personal observation has convinced us, more than ever before, of our grave shortcomings as regards the surgical treatment of uterine cancer.

Although the radical operation has given the best ultimate statistics, so far as the number of permanent cures is concerned, experience has proved that beyond doubt, it is also attended with an unavoidably high primary death-rate; that it is followed by serious post-operative sequelæ which are difficult to cure, and that when these are irremediable, they leave our patients in a very wretched condition. Since the American Gynæcological Society so thoroughly reviewed this subject four years ago, I have found no reason to alter my views as expressed at that time after a study of my own cases. The conclusions then reached were as follows:

1. The operation, in expert hands, notwithstanding its high primary mortality, has given the greatest percentage of permanent cures of any therapeutic procedure thus far suggested for cancer of the cervix.

2. While the foregoing conclusion is true, the general adoption of the operation, in view of its dangers and difficulties, is not to be advised until the primary mortality can be reduced to a much lower percentage by a simplification or a perfection of details.

3. The abandonment of the extensive glandular dissection is justified, because this detail adds to the hazards and does not sufficiently increase the percentage of permanent cures.

4. The cardinal advantage of the operation lies, first, and above all, in the excision of an extensive cuff of vagina and the widest possible removal of the parametrial tissue.

5. There is no middle-of-the-road policy in cancer of the cervix. The surgeon would better perform a simple vaginal hysterectomy or a high amputation of the cervix with extensive cauterization than to attempt the radical operation if he is not prepared effectively to execute its details.

6. The earnest endeavor, by many specialists, with the improved ultimate cures in a few hands, offers the hope that a further simplification and perfection of details in this operation may yet make it more generally available.

The therapeutic problem involved in the successful treatment of carcinoma of the cervix is based upon the stage of invasion of the new-growth. The results of the radical operation have proved conclusively

that, with very rare exceptions, the hopeless cases are those of the metastatic type. All the methods now being employed, are therefore, directed toward the radical elimination of the local cervical and vaginal disease process. If the growth has invaded the parametrium to a point beyond the outer limits of the ureters, or if it has found lodgement in the iliac glands, the case must, with rare exception, be regarded as hopeless, so far as surgical extirpation is concerned. This statement may be challenged, but in that case the burden of proof falls upon the challenger. No operation as yet suggested has been more generally misapplied than has the so-called radical abdominal operation. This may be proved to one's own satisfaction by examining the specimen exhibited, as a rule, as the product of this operation. This criticism is directed not alone to the work of other surgeons, but applies with equal force to my own. There can be no more difficult surgical procedure than the radical operation for the removal of a cancerous uterus, for the efforts of the operator are impeded on all sides by insuperable limitations.

To attempt to compare the statitics of the various operators is a difficult or impossible task. In one clinic the greatest risks are taken, and an attempt is made to operate on hopeless cases in the belief that a dangerous hazard is always warranted, because thus an occasional brand may be snatched from the burning. Conversely, another surgeon, with less temerity, and possibly with better judgment, will operate only on cases that promise to reward his efforts and that are unmistakably within his surgical domain. The latter operator will, therefore, have fewer cases than the former, and, of course, his series will show a correspondingly higher rate of permanent cures. Then, too, the variation in skill of different surgeons plays an important role in the estimate of results. Because this skill varies so widely, and is so largely dependent upon the temperament and physical equipment of the surgeon, the standardization of the radical operation for cancer, whose degree of effectiveness is defined within the widest anatomic limits under the most hazardous of surgical liabilities, must remain forever upon shifting sands. In many operations the limited nature of the disease and its accessibility are such that more or less fixed principles of procedure may be evolved, and in these cases skill and judgment do not influence the operative results so profoundly.

In the anatomic division of cancer of the uterus this point may well be demonstrated, for in carcinoma of the fundus the statistics of various surgeons do not differ to any marked degree, because extirpation of the uterus generally suffices to give good results. So long as the growth is confined to the fundus, recurrence does not take place in more than 50 per cent. of cases, provided even a simple hysterectomy is performed. The rule, therefore, that calls for removal of the uterus and its adnexæ may, in the hands of a mediocre operator, be productive of a mortality incidence and a permanent percentage of cures approaching closely those of his more skilled colleague.

We are all fairly well satisfied with the results of operation in cancer of the fundus, whereas no one regards the operative treatment of cancer of the cervix with any great degree of optimism. To attain a higher measure of success, some more efficient means than the scalpel must be employed. That this remedy has not as yet been discovered is shown by the fact that almost every surgeon who has made a special study of this question very properly advocates the same principle here as has been adopted in cancer of every other part of the body

that is accessible to radical surgical measures. Notwithstanding the remarkably good results that have followed the use of radium, I still adhere to the dictum that the uterus and all possible adjacent tissue, if the growth is very limited in its extent, must be extirpated. Beyond this point, however, I have grown quite conservative. My first recession occurred eighteen years ago, after visiting Sanger's Clinic. I found that this very clever surgeon and clear thinker had even then abandoned hysterectomy as a palliative measure in widely extended cancer, on the ground that practically no hope of cure could be offered the patient, and that removal of the uterus actually intensified her subsequent suffering. Following a hysterectomy, if carcinomatous tissue is left in the parametrium, the patient's post-operative state is likely to be worse so far as pain is concerned, for it is usually severer and, therefore, more prolonged than if the uterus is allowed to remain *in situ*. With the removal of the uterus, the elastic broad ligaments and parametrium retract and cling closely to the pelvic wall, coming in contact with the large pelvic blood-vessels and the sacral plexus. If the growth remains in this situation the condition is infinitely more painful than if it is held in suspension away from the pelvic wall by the broad ligaments, and therefore, more slowly reaches the periosteum and ganglionic roots.

The crux of the situation, therefore, as our experience has taught, is to attempt surgical measures only in the clearly operable cases, leaving the large remainder to secure relief from therapeutic efforts, which give as good or, as we now believe, even far better results from the use of radium.

In the inoperable cases, I believe the Percy cautery holds out a distinct hope; nevertheless, I do not share the great degree of optimism shown by the inventor of his method as regards the cases of widespread extension. In using the cautery, as in performing the radical operation, the anatomic barriers are the same, and I am firmly convinced that its general adoption will be followed by even a larger number of serious and wretchedly disabling sequelæ, so far as the rectum, bladder and ureters are concerned. This cautery should be used only by the skilled specialists, for it is not safe in the hands of the novice. Even in skilled hands accidents are prone to occur in many instances. Moreover, one cannot get away from the fact that the Percy method is most radical, involving an abdominal section, ligation of the internal iliac arteries—a procedure that may be quite difficult in some cases—and the prolonged exposure of the patient to the slow desiccation of the tissues. This method must, therefore, be regarded as on trial, and it is to be hoped that its enthusiastic sponsor will publish a full account of cases up to date. We should know the mortality percentage and the degree of morbidity following the operation in order fairly to estimate its full value. Because of the fact that a sufficient quantity of radium was at our disposal at the University Hospital, we have followed this line of treatment almost exclusively, and we have had, therefore, but a limited experience with the desiccating method.

Under the best of clinical conditions, we are forced to throw into the surgical discard by far the largest proportion of cancer cases registered in our clinics. If we are still holding a very conservative opinion as to the final results following the Percy method, what, it may be asked, is our attitude toward the Roentgen ray treatment and the use of radio-active substances?

In this country the X-ray has not had sufficient trial to give it a place of even tentative value. To Bumm's Clinic, from which very favorable preliminary reports were issued, we looked for an elaboration of technic that would serve as a standard for comparison with radium and mesothorium. The Great War has, however, put an end to all investigation in the gynæcologic clinics of Germany, and it is only from the hospitals of the continent, where there is an abundance of material and also a willingness to risk much, so far as individual patients are concerned, to work out a theoretic principle, that we may expect authentic reports of hazardous novel procedures. The roentgenologist cannot be depended upon for convincing reports, for his cases are drawn from widely divergent sources, and too often the clinical diagnosis is accepted and no microscopic control attempted.

As to radium, I am convinced from our experience at the University Hospital that it offers the most helpful outlook of any remedy thus far presented in the palliative and occasionally the curative treatment of the border-line and inoperable cases. In the Gynæcologic Clinic of the University of Pennsylvania during the past two years, 44 cases of carcinoma of the uterus, vagina, and urethra have been so treated. Practically all of these would, according to our past standards, have been classed as inoperable and, therefore, would inevitably have been doomed.

As regard the effect of radium when applied in too large amounts and too often, Schauta's experience is enlightening. In his first series of 13 patients, from 50 to 100 mgs. of radium were applied uninterruptedly for from three to eleven days, and repeated in similar dosage after an interval of from twelve to twenty-two days. His results were most disastrous; one patient died of pyonephrosis; 8 showed steady loss of weight, with diarrhœa, tenesmus, fever, vomiting, headache, and reduction in blood count. The autopsy findings showed severe necrosis and fistulæ with diphtheritic and purulent inflammations of the rectum and bladder, sigmoiditis, and ulcerative processes in the pelvic coils of the ileum. *One striking point, however, noted at the autopsies was that in not a single instance was a trace of local carcinoma found.* In the method of its application, however, the remedy proved far worse than the disease, but this investigator established beyond question that radium radiations were absolutely destructive to cancer cells.

In a second series of 11 cases the dosage was smaller and the interval of application shorter, but in spite of this some of the patients presented the group of disagreeable symptoms just noted, but in four a local cure was effected.

In his third series of cases the dosage was regulated as follows: From 30 to 50 mg. of radium, filtered through 1.1 mm. of gold, 1 mm. of platinum, and 0.75 mm. of brass, were applied in from 5 to 8 exposures of twelve hours each, at intervals of from one to several days; an interval of rest of three to four weeks was then allowed to elapse, followed by a second but shorter exposure, and in some cases, after another interval of two to three weeks, a third series of applications was employed.

Eleven patients were thus treated; of these, 3 were somewhat improved and the remaining 8 were apparently cured. In no instance were fistulæ or necrosis produced, and the weight and general condition of the patient showed marked improvement.

As an evidence of the widespread skepticism concerning these newer remedies, and in spite of this very favorable personal experience, Schauta

declares that, although he will use radium in advanced cases, he will still continue to employ Schuchart's radical method of performing vaginal hysterectomy in the clearly operable cases, reserving radium as a post-operative prophylactic agent.

With a less intensive method than that at first employed by Schauta, we have thus far had but one patient in whom a fistula developed; this followed a radical operation in which 50 mg. of radium were left within the vaginal cuff for eight hours, another application being made in six weeks. In this case there was no apparent retardation of the growth; on the contrary, within two months great sloughing holes appeared in the rectum and bladder. Whether these were caused by the radium or were due to the rapid growth of the carcinoma we were unable to determine. In practically every case radium has been applied for twenty-four hours, and the patient has usually returned home the next day. So far as any immediate effect is concerned, in no instance have we witnessed any untoward symptom beyond a fleeting degree of nausea, and this but rarely; only in one case did a high temperature develop, and this was in a case in which the Percy cautery had been applied extensively, and was followed by a twenty-four hour application of radium. In our series of cases there have been, with these two exceptions, no disagreeable effects. Fortunately, we have not had to pass through the experimental stage of this treatment but have profited by the mistakes of the early workers. Thus far we have found an 85 to 100 mg. dosage quite satisfactory. It is possible that still better results may be achieved by larger amounts. For information on this score, however, we must turn to Drs. Kelly and Burnam.

We have adhered strictly to one rule, namely, never to attempt an operation on any case that has been healed locally by radium. It appears to us a most unwise surgical policy to subject a patient to the grave hazards of a radical operation, after the radium has acted beneficially, in a fatuous attempt to secure still more effective results. With further experience we may modify this rule, but up to the present we have not seen the slighest evidence in favor of so apparently unwise a policy.

Radium, as is shown in our series of cases, is by no means a universal panacea for cancer, even when the growth is strictly localized. There is no way of determining which case will be benefited by its use. There is beyond a doubt a certain percentage—how small or how great we cannot tell from our experience—in which cancerous growths are not retarded by radiotherapy; indeed, occasionally it would appear that there is a positive acceleration of growth. That many cases show an astounding improvement and local cure cannot be gainsaid. In our series several instances occurred in which the results achieved were so remarkable as to be almost incredible. Whether in these cases the fire is but smouldering and may break out sooner or later with renewed violence time alone will tell.

In the discussion of these cases the question of hospital economics must not be lost sight of. The length of stay in the hospital following a radical operation will average at least three weeks; whereas, after the application of radium not more than three days will be required. When complications arise after radical operations they are usually serious, entailing much suffering. Such patients, on returning home, are likely to remain semi-invalids for several weeks, and when, as is frequently the case, there is a rapid continuation of the disease, they become a heavy

burden to a poor family. In the comparison of statistics, this difference between the two classes of patients is greatly in favor of those treated by radium a fact that tends to incline us strongly to the use of radium in border-line cases, which we formerly subjected to a radical operation.

It would also appear to be a self-evident fact that the post-operative effects of the Percy method must fall far short of those of the radium cases. I cannot here enter into a discussion of ultimate curative results, even though at present they may appear most promising, for we are on the very threshold of a therapeutic innovation that may, in the end, prove of less value in effecting a cure than the radical method of performing a hysterectomy.

Removal of the uterus in cases of cancer of the fundus has yielded such goods results that I do not feel we are justified in taking any chances with radium, not even in the border-line cases. *Our attitude toward the cervical and fundal growths is diametrically opposite. In border-line cases of cancer of the cervix we invariably employ radium. In advanced cases of cancer of the fundus we invariably perform a hysterectomy.* A pessimistic view dominates our outlook in the surgical treatment of the cervical growths if the pathologic process is at all advanced, whereas fundal growths may be viewed with a cheerful optimism, even when the cancerous process is extensive. As a palliative agent, we may assert with full assurance that we have never obtained results with any other method that have even approached in beneficence those secured by radium. The cloud, however, that hangs over the remedy is the danger of unbridled optimism.

The following three tables are appended, as they give the final results in the radical operation for cancer of the fundus and the palliative results in cases treated by radium during the last two years. A very close oversight is being kept of the radium cases, and we expect from time to time to give reports on all of these cases.

THE RADICAL OPERATION FOR CARCINOMA OF CERVIX.

Operative deaths (peritonitis)	5
Died from continuance in 3 months	1
Died from continuance in 6 months	3
Died from continuance in 10 months	1
Died from continuance in 11 months	1
Died from continuance in 12 months	3
Died from continuance in 15 months	1
Died from continuance in 16 months	1
Died from continuance in 18 months	5
Died from continuance in 2 years	6
Unable to trace	10
Alive and no sign of continuance:	
One year	2
One and one-half years	3
Three years	0
Four years	2
Five years	1
Six years	6
Seven years	1
Eight years	1
Total number of cases	53

Post-operative Sequelae

Suppuration of abdominal incision	8
Cystitis	4
Peritonitis (recovery)	3
Ureteral fistulæ	2
Vesical fistulæ	5
Phlebitis	1
Laceration of rectum (fistula)	1
Pleurisy	2
Rectovaginal fistula	2
Average stay in hospital	21 days at least

Panhysterectomy for Carcinoma of Fundus

Operative deaths (one patient died one week after operation from a general metastasis of chorioepithelioma. Death occurred from widespread involvement of the lungs with the malignant process. Other patient died from peritonitis)	2
Well over six years	5
Well over five years	1
Well over four years	1
Well over three and one-half years	2
Well over two and three-fourths year	2
Well over two years	2
Well over one year	1
Died from continuance of disease in 3 months	1
Died from continuance of disease in 7 months	1
Died from continuance of disease in 1 year	1
Died from continuance of disease in 3 years	1
Died from continuance of disease in 5 years	2
Died in two and one-half years from mastoid abscess (complete autopsy revealed no microscopic trace of cancer either in pelvis or in the abdominal lymph glands)	1
Unable to trace	3
Total number of cases	26

Use of Radium in Inoperable Cancer of Cervix, Vagina and Urethra[1]

Deaths following treatment	0
Died from continuance in 1 month	4
Died from continuance in 2 months	1
Died from continuance in 3 months	1
Died from continuance in 4 months	1
Died from continuance in 6 months	1
Died from continuance in 7 months	1
Died from continuance in 8 months	1
Died from continuance in 9 months	1
Died from continuance in 10 months	1
Died from continuance in 11 months	1

[1] This table is a complete record of cases treated by radium up to the time of this paper going to print, September 15, 1916.

Alive 22 months	2
Alive 21 months	1
Alive 16 months	1
Alive 14 months	1
Alive 12 months	2
Alive 11 months	1
Alive 10 months	1
Alive 9 months	1
Alive 7 months	5
Alive 6 months	2
Alive 5 months	1
Alive 4 months	5
Alive 3 months	4
Alive 2 months	15
Alive 1 month	4
Not traced	10
Total number of cases	69

HISTORY OF PATIENT AFTER APPLICATION OF RADIUM

Relief of hemorrhage (complete)	34
Recurrence of hemorrhage in 3 weeks	1
Recurrence of hemorrhage in 4 weeks	1
Recurrence of hemorrhage in 6 weeks	1
Recurrence of hemorrhage in 2 months	1
Recurrence of hemorrhage in 3 months	1
Recurrence of hemorrhage in 4 months	1
Recurrence of hemorrhage in 8 months	1
Relief of pain (complete)	2
Relief of pain for 2 months	1
No relief of pain	18
No symptomatic relief	12
Local healing of ulcerative area (of this number, 2 died subsequently of internal metastasis)	26
Rapid extension of growth, coincident vesicovaginal and rectovaginal fistuale	5
Immediate untowards result	0

Average stay in hospital—about 3 days.

THE TREATMENT OF LEUKOPLAKIA BY RADIUM*

BY RUSSELL H. BOGGS, M. D., PITTSBURG, PA., ROENTGENOLOGIST, ALLEGHENY GENERAL HOSPITAL; DERMATOLOGIST AND ROENTGENOLOGIST, PITTSBURG, COLUMBIA AND ST. FRANCIS HOSPITALS.

Radium has proved a very useful agent in the treatment of leukoplakia, which has been very resistant to most forms of treatment. It is

*Texas Medical Journal, XXXII, 224-6, November, 1916.

a forerunner of epithelioma in many instances and should receive just as prompt and efficient treatment as precancerous lesions on the skin.

Leukoplakia is a disease which attacks the mucous membrane of the tongue, the inner surface of the cheeks, gums, lips, roof of the mouth and rarely the vagina and genitals. It is characterized by one or more whitish patches, often more or less thickened. The surface is smooth, roughened or somewhat papillomatous, and there may be an encircling hyperemia. The course is chronic and ulceration and malignant changes frequently occur. In some cases the lesions, after reaching a certain stage, remain stationary for a long time. The process is one of proliferation of the cells of the rete malpighii with cellular infiltration in the papillary layer of the corium. When examined closely, these lesions are found to be made of a hyperkeratinized epithelium, being covered by adherent and more or less dense pellicle, removable only by artificial means and closely applied to the inferior stratum of the mucous.

Views on buccal leukoplakia have given birth to a series of hypotheses that have been enunciated one after the other during the last few years. It is generally conceded that there are two forms of leukoplakia; first, the true idiopathic, the cause of which is unknown and which alone leads on to an epithelioma in the form of the so-called smoker's cancer; and the false, which is a form of tertiary syphilis, always more or less sclero-gummatous, and, according to some authorities, is never followed by cancer. Some authorities, to the contrary, state that there are two principal factors in the production of cancer of the mouth and in most instances they are both present, namely, syphilis and the use of tobacco. Without denying the great frequency of tertiary syphilis of the mouth and its possible transformation into cancer, there is no question of the existence of the non-syphilitic leukoplakia, chronic from the onset, followed by epitheliomatous degeneration. It makes its appearance almost exclusively in men between the ages of forty and sixty. It is different from the syphilitic lesion, and as a matter of fact should be treated as a superficial epithelioma. Syphilitic leukoplakia is accompanied by induration, fissures and later by scarring and white fibrous tracts. The diagnosis may be confirmed by a Wassermann. I feel sure that many of the syphilitic lesions of the mouth later become cancerous, but this type of malignancy does not respond readily to any form of treatment. It has been shown in the past that the treatment of true leukoplakia has not been satisfactory from the irritating methods of cauterization. When first seen the lesions are very superficial and it is not necessary to use a method which will destroy tissue at a depth more than one or two millimeters. On account of the successful results which I have obtained in the treatment of epithelioma with radium and on account of its easy application to the mucous membrane of the mouth, I decided to employ radium in my first case, almost three years ago. The results were so satisfactory that I have been treating all cases of true idiopathic leukoplakia as well as a few cases of syphilitic leukoplakia ever since. The latter have not responded nearly so well, but accomplishes more even in the luetic type than any other local form of treatment we possess today, because I believe in many instances we have an epithelioma situated in syphilitic tissue and will not respond to one form of treatment alone. In true leukoplakia we must abstain from giving iodides or compounds of iodine, the effects of which are deplorable. Many of the cases have had such treatment before they were referred, which only aggravated the condition. It is necessary to make an early diagnosis since all ir-

ritating treatment is contra-indicated. It is a waste of time to use gargles and inert medication.

In the treatment of leukoplakia the best results are obtained by the rays of low penetration, as it is not necessary to have a reaction deeper than one or two millimeters. I have been using one-half a millimeter of silver, several layers of gauze and a finger cot as a filter. This allows a large amount of the beta rays to be used in the treatment. Whether this is absolutely essential I am unable to state, but, by using this amount of filtration, the time of exposure can be considerably reduced. Using a tube containing 25 milligrams of the element, one to two hours is usually sufficient for each lesion depending upon its stage and extent. On the tongue, on account of the papillae, it requires a slightly larger dose than on the buccal membranes, but I always attempt to clear up the lesion with the smallest amount of irritation possible. This is contrary to my usual procedure in epithelioma of the skin or carcinoma of the cervix or uterus, where intensive radiation is given as quickly as possible. This coincides with many observers and is the principal reason why results are so unsatisfactory from irritating caustics.

In this connection let me cite a case to illustrate the usual course of many of the leukoplakias. Mr. M., age 50, had a leukoplakia on the left inner side of the cheek. It was treated by caustics, first by his dentist, again by his family physician, and a year later was removed surgically and the pathological report was epithelioma. It recured, and a second operation was performed. Three months after his last operation he was referred for radiotherapy with a large infiltrated growth in his mouth, which was broken down and very offensive, and he was scarcely able to open his mouth. The glands were involved and he was suffering a great deal of pain. Radiotherapy relieved the pain, killed the offensive odor and checked the disease, but he died eight months later. These are the cases that should have early radium therapy instead of inert irritating treatment. We all have witnessed precancerous lesions in the mouth following similar sad experiences, seeing the disease progress under inefficient treatment. Epithelioma in the mouth is always a serious condition if the disease is advanced and the results produced by radium will, in the future, bring patients early so they can be treated in the precancerous stage. Leukoplakia in the past has been considered a trivial lesion and from the description in text-books it is not any wonder that it is so considered by many.

In conclusion, radium has proven to be an efficient form of treatment. Leukoplakia is frequently a forerunner of epithelioma and should always be seriously considered.

Even when leukoplakia has become epitheliomatous, radium is the best form of treatment we possess today and some remarkable results have been obtained, but a guarded prognosis must always be given if the disease is advanced and there is glandular involvement.

REVIEWS AND ABSTRACTS.

William H. Dieffenbach, M. D., (New York City). Reports on Cancer Patients Treated With Roentgen or Radium Rays Remaining Clinically Cured After More Than Three Years. Journ. Am. Inst.

Homeop. IX, 430-436, Oct., 1916. This brief report is presented as an effort to reply to the many recent contradictory statements as to the value of radiotherapy in malignant conditions.

Physicians who have tested radiology for a period of years, have, in spite of malicious and misinformed detraction, definite convictions as to the value of radiotherapy in malignant disease and have the proofs of their convictions in the living patients.

True it is that *no specific* or *panacea* for the treatment of cancer exists today, but equally true is the statement that properly dosed radiotherapy can positively inhibit cellular activity and in some cases cure and in others retard malignant invasion.

In making these positive statements the writer does not wish to minimize the value of surgery or remedial measures in the treatment of cancer. Some of the most remarkable results noted were due to the combination of surgery plus radiotherapy, and further progress can undoubtedly be achieved by the conjoined utilization of constitutional, surgical and physical therapeutics in the cure and control of this scourge of mankind. The following histories are cited:

Case I. Mrs. L. G., aet. 35. Patient of Dr. Baruch, New York City.

Date of entry, April, 1904.

Diagnosis: Osteosarcoma of the lower jaw.

Patient was examined by the late Dr. W. T. Bull, who refused to operate. Patient was referred for radium treatment as a last recourse and for the past twelve years has been under treatment and observation. Radium has inhibited the growth, has prevented metastasis and, although there is still a deformity of the jaw remaining, the lesion is quiescent.

Case II. Miss O. Patient of Dr. W. G. Crump, New York City.

Date of entry: January, 1905.

Diagnosis: Cancer of cervix and posterior fornix.

This patient was operated upon twice and there were two recurrences. After the second recurrence radium was given a trial by means of a coated rod of 25,000 activity which was placed in the vagina against and about the recurrence for one hour weekly for one year. During my absence in Europe, Dr. William Harvey King continued the treatment, using a ten milligramme glass tube for one hour weekly. The nodules contracted and no recurrence has been noted for eleven years. Patient is a professional nurse and is active in her work today.

Case III. Miss G., aet. 64. Patient of Dr. Johnston, Brooklyn.

Date of entry, April, 1905.

Diagnosis: Epithelioma involving concha of the ear.

Operation with removal of concha was advised, but refused. This patient was treated with radium and after six months no vestige of the tumor remained. She was exhibited before the New York County Society in 1910 as a cured patient and has had no recurrence after eleven years.

Case IV. Hon T. B., aet. 58. Patient of the late Dr. James P. Tuttle, New York City.

Date of entry, 1906.

Dr. Tuttle had diagnosed carcinoma of the rectum and advocated radical operation but frankly stated that he could not guarantee a cure. A large fee was demanded and the patient considered the combination unsatisfactory. Some political friend suggested a trial of radium. A

specially coated rectal bougie was made, 25,000 activity, and applied in the rectum for two hours weekly for several months. This checked the hemorrhages and improved the symptoms so that the patient paid for the bougie and continued treatment at home. I had considered, not having heard from this patient for years, that he had joined the great majority and was surprised to receive a note last year that he was a candidate for sheriff in a neighboring county. Inhibition of this lesion can be claimed for fully ten years.

Case V. Mr. C .E. C., aet. 72. Patient of Dr. H. C. Reynolds, Passaic, N. J.

Date 1907.

Diagnosis: *Epithelioma of cheek.*

Developed epithelioma of right check in 1904. The growth was excised and recurred in two years. Was referred for radium treatment and a series of massive doses were given in monthly treatments. There had been no recurrence for eight years. This patient was shown before the New York County Society for 1910 as a cured case.

Case VI. Miss F. H., aet. 44. Patient of Dr. E. St. John, Savannah, Ga.

Date: *October* 29, 1909.

Diagnosis: *Carcinoma of left breast.*

There was a marked induration of the left upper quadrant with involvement of the left axilla and also one nodule in the right axilla subsequently. Operation was advised but refused by patient. These lesions were treated by means of a large placque 4x4 inches coated with radium of 25,000 activity. This large placque was fastened over the various areas involved and kept *in situ* five days at a time. Severe dermatitis supervened but as the patient was anxious to return home, treatment was repeated once a month for three months.

Patient visited New York City in 1913, four years after the original treatment, and no mestatasis and no evidence of the lesion was present. Heard from the patient in 1915; she was still in good health.

Case VII. Mrs. B., aet. 64.

Date: *June,* 1909.

Diagnosis: *Inoperable carcinoma of left breast with contracted nipple, which was invisible.*

This patient had been refused admission to the Chapin Home for the Aged on account of the cancer of the breast and was one of the first patients in whom injections of solutions of radium gelatin was tried. The lesion was injected with half an ounce of radium gelatin solution, 25,000 activity, in June, 1909. A second injection of the same quality and quantity solution was made in January, 1911, when evidence of recurrence and further involvement was noted.

This lesion is quiescent at present. The nipple is still invisible and the tissue about it contracted into a hard sclerotic mass covered with telangiectasis. There has been no mestastasis; the patient is very well and has been accepted at a Methodist Home for Respectable Indigent Females. Seven years have elapsed since the first injection.

Case VIII. Mrs. S. T., aet. 73.

Date: *January,* 1910.

Diagnosis: *Carcinoma of right breast with metastasis in right axilla and left axilla.*

This patient was referred to me as inoperable. Has had massive doses of radium over isolated nodules and massive general thoracic exposures of Roentgen ray. The lesions have sclerosed and patient is in apparently good condition after six years.

Case IX. Mrs. B., aet. 60.

Date: *June* 13, 1910.

Diagnosis: *Recurrent cancer of left breast and axilla.*

This patient had a Halstead operation of the left breast Feb. 9, 1910, and recurrence in June, 1910. Swelling of left arm and metastasis in left axilla. This is *one* of the few of this character who has been benefited. Had monthly massive Roentgen rays and was treated for two years. No evidence of metastasis is present after six years.

Case X. Mr. C. D. M., aet. 61. Patient of Dr. Broughton, Brooklyn.

Date: *March* 21, 1911

Diagnosis: *Recurring epithelioma.*

Presented an epithelioma involving right lower eyelid and cheek. Had been cauterized twice and operated four times. Recurrence after each treatment. Radium given in 100 milligram hour doses sclerosed the whole area and there has been no recurrence for over five years.

Case XI. Mrs. S. P., aet. 58. Patient of Dr. T. H. Lemmerz, Jersey City, N. J.

Date: *April* 2, 1911.

Diagnosis: *Inoperable Cancer involving greater part of left ear and tissues adjoining.*

Patient was taken to hospital and massive doses of radium applied, 2,100 milligram hours divided over the entire surface. After one month, massive Roentgen ray was applied for several months in succession. The whole lesion sclerosed, the ear was saved and it is difficult to tell at the present time where lesion was located. No recurrence in five years.

Case XII. Mr. F. C., aet. 69. An emergency case treated in conjunction with the late Dr. Bukk G. Carleton and Dr. Sprague Carleton.

Date: *December*, 1911.

Diagnosis: *Cancer of the bladder.*

This patient had, on and off, suffered from hematuria and had the misfortune to break his catheter in the deep urethra while performing his usual cystic lavage. Drs. Carleton were called in consultation and Dr. Sprague removed the broken catheter through an endoscope. Some days subsequently hematuria set in very profusely and various treatments suggested by Dr. Carleton failing to check the bleeding, a suprapubic incision was made and the bladder incised. Both Doctors Carleton diagnosed a large fungoid mass almost filling the bladder cavity and after deliberation concluded that operation was not feasible, the age and condition of the patient being considered. A prognosis of fatal termination of what both surgeons considered an inoperable carcinoma was made.

With this prognosis before him the writer concluded to test the efficacy of massive dosage of radium rays and a tube of 10 milligrams of pure radium was placed at the end of a catheter and through the incisions was introduced into the bladder. After 720 milligram hours, hemorrhages ceased and the radium was removed. The patient, almost exsanguinated, soon showed signs of improvement, but after one week, hemorrhages set in again. The process was repeated and the tube remained in the bladder for 720 milligram hours again. The patient im-

proved and resumed his business activities, passing his urine through a catheter in the abdominal incision and same emptying into a specially constructed rubber bag fastened between the groins. This patient lived for over four years after this treatment and died in January, 1916, from pneumonia.

This, it is believed, is the first case of cancer of the bladder cured through suprapubic cystotomy and massive radium radiation, for the patient at the age of 74 died of an acute disease, not involving in any way the original lesion.

Case XIII. Mrs. W., aet. 59. Patient of Dr. A. E. Austin, New York City. Treated in conjunction with Dr. E. Lathrop of Buffalo and Dr. W. G. Crump, New York City.

Date: *October,* 1912.

Diagnosis: *Recurrent papillary epithelioma involving left labia.*

This patient presented a second recurrence of a fungating mass growing from the labia about the size of a large lemon with involvement of the glands of both inguinal regions.

Following pre-operative radium treatment of the tumor and both groins for several weeks, Drs. Lathrop and Crump excised the tumor mass and the inguinal glands and cauterized the open wounds. This was followed by implantation of tubes and discs of radium in the incisions of both inguinal regions, the radium being kept in the wounds for three days. The discs were subsequently shifted at three hour intervals along the whole periphery of the incisions of the labial and inguinal tissues until the whole area had been covered and rayed. This postoperative raying had for its object the destruction of any remaining malignant tissue which the knife and cautery may have failed to reach. In October this patient will have remained free from recurrence for four years. The combination of surgery, cautery and pre-and postoperative radium treatment has in this instance changed an apparently *inoperable* case into a clinically cured one.

Case XIV. Mrs. F. Patient of Dr. Stella Q. Root, Stamford, Conn. Treated in conjunction with Dr. W. G. Crump.

Date: *October* 27, 1912.

Diagnosis: *Carcinoma of bladder.*

Surgical removal by Dr. Crump was followed by postoperative treatment with 30 milligram hours of radium through the incisions, over the site of the lesion. No recurrence after three and one-half years.

Case XV. Mr. H., aet. 61. Patient of Dr. Jas. Ackerman, Asbury Park, N. J.

Date: *February* 20, 1913.

Diagnosis: *Fungating epithelioma.*

This lesion involved the whole nose and so deformed the patient that he had to give up his business. Massive radium treatment 100 milligram hours over each area produced sclerosis. No evidence of the disease is now visible after more than three years. Nose looks normal.

Case XVI. Mrs. B. Patient of Dr. James E. Burt, New York City.

Date: 1913.

Diagnosis: *Recurrence along the scar after hysterectomy for cancer.*

This recurrence was treated by placing a tampon containing 100 milligrams of radium in a glass tube, screened by many layers of adhesive plaster, and leaving it packed in the vagina for 24 hours, thus giving 2,400 milligram hours. This exceedingly heavy dose has produced sclerosis and has prevented metastasis and recurrence. Patient is well after three years.

In selecting a few clinically cured patients from the list of histories, the writer was impressed with the fact that a much greater number of recurrent and terminal cases treated by him have succumbed than have been cured. The fact was also revealed that in the list of doctors who referred these patients a relatively large number have also died during the period quoted.

Ordinary cases of epithelioma are so frequently and readily cured that they are not cited.

Many interesting lesions have been lost track of and cannot be reported upon and the patients are presumably dead. This report is therefore made in no spirit of exultancy or superiority. It is hoped that with increased knowledge of dosage and improved remedial and dietetic treatment, the value of radiology as an adjuvant in the treatment of malignancy will be greatly extended.

From experience gained, it is especially urged that when surgery removes the products of malignancy, postoperative radiation be utilized as a positive and valuable aid in the prevention of transplantation, recurrence and matastasis.

Co-operation of the surgeon, prescriber and radiologist will, in my judgment, based on clinical experience, achieve better results than are at present secured by one method dogmatically pursued by itself. In making this statement the writer has in mind the dictum of the physician who read the recent report of the "American Association for the Control of Cancer," in which the unqualified claim is made that "surgery at the present time is the only method to be employed in the treatment of malignancy."

This statement is unfair and dangerous to the patient and directly reflects upon the integrity of many workers who have claimed virtues particularly for Roentgen and radium rays. Many thousand cured cases of epithelioma, recurrences of cancer after operation and occasional inoperable conditions can be collected from current literature to prove the contention that co-operation of various methods are required for the best results.

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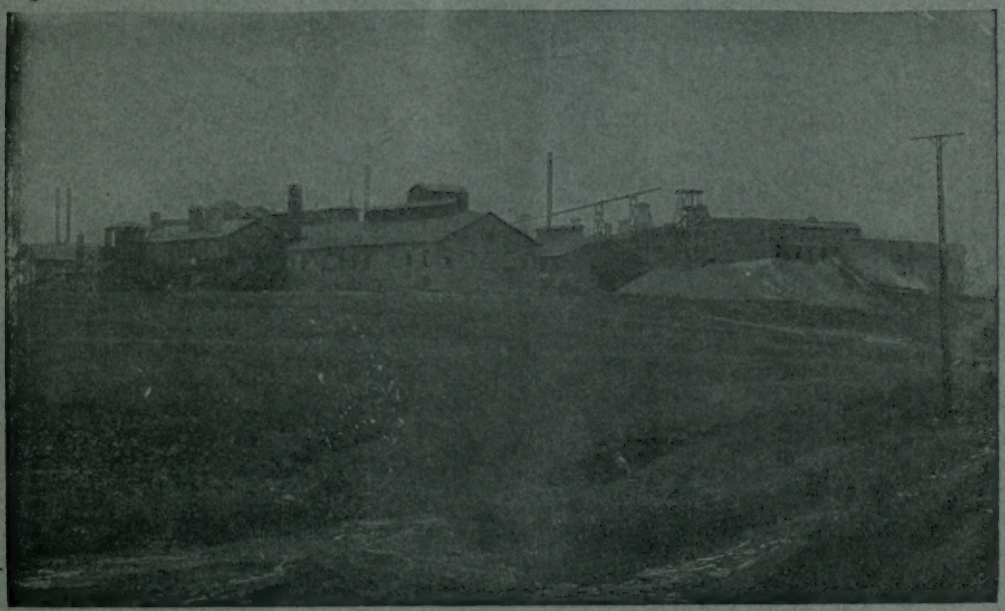

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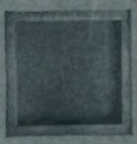

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